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APPENDIX A

1. A method for monitoring the effects of a pathology differentiating agent on a tissue sample, comprising:
applying a pathology differentiating agent on a tissue sample, wherein said pathology differentiating agent chemically interacts with said tissue sample and alters its optical characteristics; and
monitoring the rate of change of light reflection from said tissue sample over time, thereby monitoring the effects of a pathology differentiating agent on a tissue sample.
2. The method of claim 1, wherein said pathology differentiating agent is acetic acid.
3. The method of claim 1, wherein said tissue sample is a cervical tissue sample.
4. The method of claim 1, wherein said tissue sample is an esophagus tissue sample.
5. The method of claim 1, wherein said tissue sample is an ear tissue sample.
6. A method for the *in vivo* diagnosis of a tissue abnormality in a subject, comprising contacting a tissue in a subject with a pathology differentiating agent, wherein said pathology differentiating agent chemically interacts with said tissue sample and alters its optical characteristics;
exposing said tissue in said subject to optical radiation; and
monitoring the intensity of light emitted from said tissue over time, thereby diagnosing a tissue abnormality in a subject.
7. The method of claim 6, wherein said optical irradiation is broad band optical radiation.
8. The method of claim 6, wherein said optical irradiation is polarized optical radiation.
9. The method of claim 6, wherein said tissue abnormality is selected from the group consisting of a tissue atypia, a tissue dysplasia, a tissue neoplasia and cancer.
10. The method of claim 6, wherein said tissue abnormality is a high grade neoplasia

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11. The method of claim 6, wherein said tissue abnormality is a cervical intraepithelial neoplasia.
12. The method of claim 6, wherein said pathology differentiating agent is acetic acid.
13. The method of claim 6, wherein said tissue is a cervical tissue.
14. The method of claim 6, wherein said tissue is an esophagus tissue.
15. The method of claim 6, wherein said tissue is an ear tissue.
16. The method of claim 6, wherein the intensity of light emitted from said tissue over time is monitored in every spatial point of the tissue.